



# NEWSLETTER

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ASP - Newsletter

## AWARD



Steven G. Boxer  
Presidential Young Investigator

Steven Boxer of the Chemistry department, Stanford University has been awarded a Presidential Young Investigator Award.

Dr. Boxer's research focuses on the mechanism of the initial photophysics and photochemistry of photosynthesis and the combination of photochemistry and nuclear magnetic resonance to probe macromolecular topology.

The initial steps of photosynthesis involve energy transfer and electron transfer, with several steps occurring very rapidly. Dr. Boxer's approach to investigating these problems involves two distinct but convergent paths: developing methods to prove short-lived, charge-separated intermediates in natural photosynthetic reaction centers and the preparation of synthetic systems which duplicate some aspects of energy or electron transfer.

Research on charge separation in bacterial reaction centers is principally centered on the use of small and large magnetic fields to perturb the spin dynamics of the initial radical pair which is formed after photoexcitation. Magnetic fields have been shown to affect the lifetimes and yields of every species whose formation or decay involves the primary radical pair. A rather general theoretical treatment of

these effects has been developed. This theory expresses the effects of the magnetic field on the lifetimes and yields of intermediates in terms of the radical pair decay kinetics, energetics, and magnetic interactions within the radical pair. Comparison of the experimental data with theory therefore yields kinetic, energetic and magnetic properties of the initial intermediates in photosynthesis. Current work focuses on developing new types of magnetic field effects in reaction centers and amorphous Si, and probing other elements of the electron transport chain.

Attempts to duplicate photosynthesis have used a variety of covalently connected donors and acceptors. Since chlorophylls in vivo always appear to be associated with proteins, a number of semi-synthetic chlorophyll protein complexes have been prepared using apo-myoglobin and hemoglobin as host proteins. These proteins have been used to study the oriented properties of the chlorophylls, energy transfer in completely defined three-dimensional structures, and electron transfer. Recent work includes the cloning of the cDNA for human myoglobin, its expression and binding to heme and chlorophylls, and site-directed mutagenesis to explore the effects of environmental perturbations. Parallel studies are underway with natural photosynthetic systems.

A third area of research uses the laser-CIDNP method to probe protein and nucleic acid surface topology. This method supplements the high resolution of nmr with the specificity of photochemistry at the macromolecule surface. This method has been used to study electron transfer reactions involving tryptophan and guanosine, and has been applied to probe unfolding in ribonuclease, aggregation of insulin, and the loop regions of tRNA. Current work focuses on detection of secondary structural features in synthetic nucleic acids.

### From the Education Committee

The Education Committee of the American Society for Photobiology has approved a proposal for photobiology laboratory manual and solicits submission of additional material for the book. They are particularly interested in laboratory-tested exercises that clearly illustrate the wide variety of photobiological phenomena. They would also welcome less developed ideas, course laboratory write-ups, references, reprints, etc. which would serve as the nucleus for additional exercises. Since the book is meant to serve a wide audience of teachers and students, they plan to include exercises at varying levels of sophistication. Materials for the laboratory manual should be sent to: Dr. G. Douglas Crandall, Department of Biology, Emmanuel College, 400 The Fenway, Boston, MA 02115.

### Membership Data

	<u>1983</u>	<u>1984</u>
Full members	1313	1293
Student members	98	104
Emeritus members	14	15
Sustaining members	<u>11</u>	<u>11</u>
	1436	1423

### Meetings

#### 1985

- Feb 25-28 Biophysical Society, Baltimore, MD. Contact Dr. Stephen White, Dept. of Biophysics, Univ. of California at Irvine, Irvine, CA 92717
- March 25-29 Third European Congress - Energy from Biomass. Venice, Italy. Contact Dr. J. Coombs, Scientific Secretary, King's College London, 68 Half Moon Lane, London SE24 9JF, United Kingdom
- May 3-9 Radiation Research. Los Angeles.
- June 23-27 American Association of Plant Physiologists. Brown University, Providence, Rhode Island.
- June 23-28 American Society for Photobiology. The Monteleone Hotel, New Orleans, Louisiana

#### 1986

- June 8-12 AAPP. Louisiana State Univ., Baton Rouge, LA.

### Positions Open

#### Postdoctoral Positions Available:

Photochemistry of skin photosensitizers Two (2) postdoctoral positions are available to study the spectroscopic properties of skin photosensitizing chemicals. Applicants should have some interest in the application of ESR spectroscopy to the detection of photoinduced free radicals. Available immediately is a position for a non-US citizen with not more than 1-2 years of postdoctoral experience. Initial appointment is for one year at a starting salary of \$16,000 per annum for the first postdoctoral year, plus an additional allowance for dependents. The second position, an NIH Staff Fellowship, will be available in mid 1985 for a US citizen with not more than seven (7) years postdoctoral experience. Salary range is \$17,000 - \$32,955, depending on experience. Candidates should send a curriculum vitae and three letters of recommendation to Dr. Colin F. Chignell, Laboratory of Molecular Biophysics, National Institute of Environmental Health Sciences, PO Box 12233, Research Triangle Park, NC 27709, USA.

Postdoctoral Research Associate to study the structure, function and regulation of the plant photoreceptor phytochrome. Ph.D. in biochemistry, chemistry or plant physiology required. Experience with protein chemistry and spectrophotometric techniques desirable. Send curriculum vitae and names of three references to: J. Clark Lagarias, Department of Biochemistry and Biophysics, University of California, Davis, CA 95616. The University of California is an Equal Opportunity/Affirmative Action Employer.

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1985 ANNUAL MEETING - AMERICAN SOCIETY FOR PHOTOBIOLOGY

The 13th Annual Meeting of the Society will be held June 23-27, 1985, at the Monteleone Hotel, in New Orleans, Louisiana. Be on the lookout for the Call-for-Papers, scheduled to be mailed to all Members at approximately the same time as this Newsletter. For additional packets contact the Secretariat at (703)790-1745.

Please note that the October Newsletter listed the Meeting dates as June 23-28, 1985. It has since been determined that the meeting will NOT run over onto the 28th.

From the Annual Report of the Journal Photochemistry and Photobiology

Subscriptions

	<u>12/82</u>	<u>12/83</u>
Libraries	958	940
Individuals	62	65
Members (ASP)	1301	1270
	<u>2321</u>	<u>2275</u>

Manuscripts Published

<u>Category</u>	<u>No. of Manuscripts</u>
Phototechnology; Photochemistry; Spectroscopy	73
Photosensitization; UV (and Visible) Radiation Effects	54
Environmental Photobiology; Medicine	16
Chronobiology; Photoreception; Vision	14
Photomorphogenesis; Photomovement; Photosynthesis	58
Bioluminescence; Other	<u>15</u>
TOTAL	230

The overall acceptance rate was 60%. In addition to the 230 manuscripts (including nine Yearly Reviews), seven book reviews were published. The total number of pages printed in 1983 was 1,496. Fifty-four percent (54%) of the manuscripts were from the U.S.A., 34% from Europe and Canada, and the rest from 22 other countries. Of the non-US countries, West Germany (20), Japan (18), the United Kingdom (13), and France (12) all had more than ten manuscripts accepted.

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